

GENERAL INDEX TO VOLUME XXVI

New scientific names of plants and the final members of new combinations are printed in **bold face type**; synonyms and page numbers having reference to figures and plates, in *italics*; and previously published names and all other matter, in ordinary type.

A

- Adenocalymma cocleensis*, 307
Alchemilla aphanoides var. *subalpestris*, 287; *pectinata*, 287
 Allen, C. K., Panamanian *Halenia* determined by, 298
 Allen, P. H., R. E. Woodson, Jr., R. J. Seibert, and, collections during the summer of 1938, chiefly by, 265
 Almirante, collections made in, during 1938, 269
 Anderson, Edgar, and Ruth Peck Ownbey. The genetic coefficients of specific difference, 325
 Apocynaceae: New or otherwise noteworthy, of tropical America VI, 95, VII, 257; Panamanian, 299
 Apparatus: used in testing strength of wood, 34, 80; used in tree-temperature study, 166, 166
Arrabidaea obliqua, 307; *Pleci*, 307
 Asclepiadaceae, Panamanian, 301
 Asclepiads, Two new, from the western United States, 261
Asclepias albicans, 264; *brachystephana*, 264; *californica*, 263; *Cryptoceros*, 262; *Cutleri*, 263, 263; *Davisii*, 261, 262; *perennis*, 264; *uncialis*, 264
Aspidosperma, 258
 Auxin response in *Nicotiana alata* and *N. Langsdorffii*, 332, 349

B

- Bignoniaceae, Panamanian, 307
 Blake, S. F., Panama plants determined, by: Compositae, 314; Polygalaceae, 288
Blakea Woodsoni, 296
 Bromeliaceae, Panamanian, 275
 Brown's synthetic medium, growth of *Gibberella Saubinetii* on, 104, 152
 Buxaceae, Panamanian, 291
Buxus citrifolia, 291

C

- Calathea insignis*, 279; *lutea*, 279; *quadriscipata*, 278; *sclerobracteata*, 279
 ANN. MO. BOT. GARD., VOL. 26, 1939

- Camp, W. H., Panamanian *Vacciniaceae* determined by, 297
Campanea chiriquana, 310; *Humboldtii*, 311; *Oerstedii*, 311
 Canal Zone region, collections made in, during 1938, 265
 Caprifoliaceae, Panamanian, 314
Carex Lemniana, 274
 Casita Alta, camp at, 268, 269
 Celastraceae, Panamanian, 291
 Cells: of *Nicotiana alata* and *N. Langsdorffii*, 329, 330, 357, 360; variation of, in relation to strength properties of wood, 11
 Cellulose in wood, 18, 25
Centronia phlomoides, 295
Chaetocladius, 382
 Chiriquí: collections in, during summer of 1938, 265; meadow near summit of Volcán de Chiriquí, 268
Cissus erosa, 294
 Clausen, R. T., Panamanian *Ophioglossaceae* determined by, 274
Columnnea microcalyx, 313; *panamensis*, 312; *tomentulosa*, 312
Comarostaphylis arbutoides, 297; *chiriquensis*, 297
 Compositae, Panamanian, 314
 Compression tests of wood, 38, 44
 "Compression wood," 2
 Conidial forms, variation of, in *Gibberella Saubinetii*, 106, 133
 Coniferous wood, Microscopic study of, in relation to its strength properties, 1
 Contributions toward a flora of Panama. III, Collections during the summer of 1938, chiefly by R. E. Woodson, Jr., P. H. Allen, and R. J. Seibert, 265
 Coon's synthetic medium, variation of *Gibberella Saubinetii* on, 104, 152
Costus argenteus, 277; *hirsutus*, 278; *Lima*, 267, 277, var. *Wedelianus*, 277; *vilosissimus*, 277
 Cottonwood tree, temperatures in, 167
Croton Allenii, 289
 Cucurbitaceae sp., 314
Cuscuta trichostyla, 306; *Woodsonii*, 305, 306

- Cuscutaceae, Panamanian, 305
 Cutler, Hugh Carson. Monograph of the North American species of the genus *Ephedra*, 373
 Cyperaceae, Panamanian, 274
Cyperus albomarginatus, 274
Cypripedium caudatum, 279; *Hartwegii*, 280
 Cytological study: of *Gibberella Saubinetii*, 105, 140; of *Nicotiana*, 325, 349

D

- "Degree-hours" in tree temperatures, 170, 171, 186
 Density of wood in relation to strength, 3
 Dilleniaceae, Panamanian, 290
Dinema paleaceum, 282
Diplazium Lindbergii, 273
 Dissociation in fungi, 100
 Drill press arranged for finishing test sections of wood tension specimens, 80
 "Druckholz," 2

E

- Elaphoglossum Dombeyanum, 274
Ephedra, Monograph of the North American species of the genus, 373
Ephedra, 382; *antisiphilitica*, 414, var. *brachycarpa*, 416; *antisiphilitica*, 384, 404, f. *monstroza*, 390, var. *pedunculata*, 404; x *arenicola*, 393; *aspera*, 398; *californica*, 395; *Clokeyi*, 402; *compacta*, 417; *Coryi*, 412, var. *viscida*, 413; *distachya*, 383; *fasciculata*, 401; *funerea*, 394; x *intermixta*, 388; *monostachya*, 374; *nevadensis*, 404, f. *rosea*, 407; *nevadensis* subvar. *paucibracteata*, 405, subvar. *pluribracteata*, 408, var. *viridis*, 408; *occidentalis*, 384, 414; *pedunculata*, 417; *peninsularis*, 399; *Reedii*, 399; *texana*, 414; *Torreyana*, 389; *trifaria*, 384; *trifurca*, 384; *trifurca*, 389; *trifurcus*, 384; *viridis*, 408
Epidendrum auritum, 282; *Boothii*, 282; *Boothianum*, 283; *isomerum*, 283; *Lindenianum*, 283; *paleaceum*, 283; *prismatocarpum*, 283
Eugenia salamancana, 295
 Euphorbiaceae, Panamanian, 289

F

- Fernaldia asperoglottis*, 96; *speciosissima*, 267, 300
 Fibers, wood, structure of, 63
 Fibrillar angle of wood in relation to strength, 21, 50, 84, 86, 88, 90, 92, 94
Forsteronia spicata, 269, 299
 Fungi, variation in, 99

- Fusarium*: saltation of, 142; *graminearum*, 99, mycelial and pionnotal stages of, 133

G

- Galeandra*, 284; *Batemanii*, 284; *Baueri*, 284
 Garland, Hereford. A microscopic study of coniferous wood in relation to its strength properties, 1
 Genetic coefficient of specific difference, 325; an estimate of, between *Nicotiana alata* and *N. Langsdorffii*, 328
 Gentianaceae, Panamanian, 298
 Gesneriaceae, Panamanian, 308
Gibberella Saubinetii (Mout.) Sacc. (*Fusarium graminearum* Schwabe), Studies on variation in, 99
Gibberella Saubinetii, 99; aerial mycelial stage of, 133, 156; cultures of, 104, grown on various media, 136, 150-158; hyphal anastomoses in, 160-164; peritheciium of, 158; pionnotal stage of, 133, 156; variation in strains, 110
 Gleason, H. A., Panamanian Melastomaceae determined by, 295
 Goddard, Mary. Studies on variation in *Gibberella Saubinetii* (Mont.) Sacc. (*Fusarium graminearum* Schwabe), 99
Gonolobus dubius, 303; *edulis*, 305; *Monnicheanus*, 303, 304
Govenia cililabia, 285
 Greenman, J. M., Panama Senecio determined by, 314
 Growth: effect of hormone on, of *Nicotiana*, 332, 349; in relation to strength of wood, 6
Gustavia brachycarpa, 296
 Guttiferae, Panamanian, 294

H

- Habenaria heptadactyla*, 280; *pauciflora*, 280; *setifera*, 280
Hackelia costaricensis, 269
Halenia rhyacophila, 299; *Woodsoniana*, 298
Heliconia marginata, 277; *nutans*, 276
 Hemicelluloses in wood, 25
Hesperomeles chiriquensis, 288; *obovata*, 288
 Hormone, effect of, on growth of *Nicotiana*, 332, 349
 Hymenophyllaceae, Panamanian, 273
Hypericum Woodsonii, 294

I

- Indoleacetic acid, Morphogenetic differences between *Nicotiana alata* and *N. Langsdorffii* as indicated by their response to, 349

Isoetaceae, Panamanian, 272

Isoetes cubana, 273; *Gardneriana*, 273;
Malinverniana, 273; *panamensis*, 272;
Storkii, 273; *triangula*, 273

J

Jonker, F. P., Panamanian Gentianaceae
determined by, 298

Juncaceae, Panamanian, 275

K

Kohleria elegans, 309; *serrulata*, 309

L

Laestadia lechleri, 316; *musciicola*, 316

Lag period in tree temperatures, 171

Lagenophora commersonii, 316; *harioti*,
316; *hirsuta*, 316; *lechleri*, 316;
mauensis, 317; *musciicola*, 316; *nudi-*
caulis, 316; *panamensis*, 314, 324;
purpurascens, 316

Lanolin paste, effect of, on growth of
Nicotiana, 352

Leceythydiaceae, Panamanian, 296

Leonian's agar, growth of *Gibberella*
Saubinetii on, 104, 107, 152, 158

Lignin in wood, 25

Liparis elata, 282

Lisianthus chelonoides, 298

Luehea candida, 290

Lundell, C. L., Panamanian plants de-
termined by: *Buxaceae*, 291; *Cela-*
straceae, 292; *Myrsinaceae*, 292

Lundia corymbifera, 307

Luzula gigantea var. *vulcanica*, 275

Lycopodiaceae, Panamanian, 272

Lycopodium erythraeum, 272

M

Macroscopis panamensis, 301, 302;
tristis, 302

Macrosiphonia Brachysiphon, 98, var.
magnifica, 97

Malaxis majanthemifolia, 281; *Par-*
thonii, 281; *Woodsonii*, 281, 320

Malt extract agar, 105

Mandevilla convolvulacea, 97; *dissim-*
ilis, 96; *equatorialis*, 96; *Jamesonii*,
96; *Lobbii*, 95

Marantaceae, Panamanian, 278

Marsdenia crassipes, 302; *macrophylla*,
303

Maxillaria Boothii, 282; *pubilabia*, 285;
ringens, 285; *Rousseauae*, 285

Maxon, William R., Panama plants
determined by: *Hymenophyllaceae*,
273; *Isoetaceae*, 272; *Lycopodiaceae*,
272; *Polypodiaceae*, 273

Maytenus Woodsoni, 291, 322; *verti-*
cillata, 292

Media, effect of various, on variation
in *Gibberella Saubinetii*, 104, 150-
158

Melastomaceae, Panamanian, 295

Mesechites bicorniculata, 259; *trifida*
var. *tomentulosa*, 259

Miconia Lindenii, 296

Microscopic study of coniferous wood
in relation to its strength properties,
1

Mixochimaera, 137

Moisture content of wood, 28

Monnina xalapensis, 288

Monograph of the North American
species of the genus *Ephedra*, 373

Morphogenetic differences: between *Nic-*
otiana alata and *N. Langsdorffii*, 328,
as indicated by their response to in-
doleacetic acid, 349; in biological
groups, 325

Morton, C. V., Panama plants deter-
mined by: *Gesneriaceae*, 308; *Isoeta-*
ceae, 272

Mortoniella, 257; *Pittieri*, 257

Musaceae, Panamanian, 276

Mutation in fungi, 100

Myrsinaceae, Panamanian, 292

Myrtaceae, Panamanian, 295

N

Nagel, Lillian. Morphogenetic dif-
ferences between *Nicotiana alata* and *N.*
Langsdorffii as indicated by their re-
sponse to indoleacetic acid, 349

New or otherwise noteworthy *Apocyn-*
aceae of tropical America. VI, 95,
VII, 257

Nicotiana affinis, 328; *alata*, 328, 349,
351; *Forgetiana*, 328; *Langsdorffii*,
328, 349, 351; *rustica*, 328; *Sanderae*,
328

Nicotiana alata and *N. Langsdorffii*:
angle of divergence of appendages,
332, 333; cells of, 329, 330, 357, 360;
corolla parts, 329, growth of, 357, 358,
359; genetic coefficients which dif-
ferentiate, 328; inflorescences of, 336,
337, 348, 351, 370; Morphogenetic
differences between, as indicated by
their response to indoleacetic acid,
349, 361, 362, 370, 372; pollen grains
of, 331, 335

Nidema Boothii, 283

Notylia bicolor, 287; *Cordesi*, 286,
320; *linearis*, 287; *ramonensis*, 287;
Wulfschlaegeliana, 287

O

Odontoglossum Oerstedii, 285

Ophioglossaceae, Panamanian, 274

- Ophioglossum nudicaule* var. *tenerum*, 274
Orchidaceae, Panamanian, 279
Osmoglossum anceps, 285
 Ownbey, Ruth Peck, Edgar Anderson and. The genetic coefficients of specific difference, 325

P

- Panama: camp at Casita Alta, 268, 269; Contributions toward a flora of, III, Collections during the summer of 1938, chiefly by R. E. Woodson, Jr., R. J. Seibert, and P. H. Allen, 265; meadow near summit of Volcán de Chiriquí, 268
Papiliopteris caudatum, 279
Papiliopteris caudatum, 279
Parathesis macrophylla, 294; *melanosticta*, 294; *Seibertii*, 292
 Perry, L. M., Panama *Alchemillas* determined by, 287
Phragmipedium caudatum, 279; *Hartwegii*, 280
Phragmopedium, 280; *Hartwegii*, 280
 Phylogenetic patterns, determination of, in *Nicotiana*, 344
 Pine, loblolly and shortleaf, 34; effect of growth ring width on strength, 41; strength tests, 36, 42, 82
Pinus echinata, 34; *Taeda*, 34
Piper affectans, 269; *Gigas*, 269
Piqueria trinervia var. *luxurians*, 317
 Planks used for testing strength of wood, 82
 Plastid development in *Nicotiana*, 333
Pleurothallis, *Bourgeaui*, 281; *mandibularis*, 281; *polystachya*, 281; *vittata*, 280
Plukenetia volubilis, 289
Polygalaceae, Panamanian, 288
Polypodiaceae, Panamanian, 273
Ponthieva Ehippium, 380; *racemosa*, 280
Populus deltoides, study of temperature in, 167
 Potato-dextrose agar, growth of *Gibberella Saubinetii* on, 104; at various temperatures, 110, 150-156
Prestonia concolor, 259; *dentigera*, 258; *isthmica*, 300; *obovata*, 259; *remediorum*, 267, 299

R

- Rauwolfia canescens* var. *glabra*, 299; *hirsuta* var. *glabra*, 299
Renalmia exaltata, 278
 Reynolds, Ernest S. Tree temperatures and thermostat, 165
 Richards' agar, variation in *Gibberella Saubinetii* on, 105, 152

- Rodriguezia compacta*, 285
Rosaceae, Panamanian, 287
 "Rotholz," 2
Rubiaceae, Panamanian, 313
Rudgea cornifolia, 313; *fimbriata*, 313; *isthmensis*, 313
Rynchospora triflora, 275

S

- Sabazia pinetorum*, 317, var. *dispar*, 317; *triangularis* var. *papposa*, 317
Saldanhaea Seemanniana, 307
 Saltation in fungi, 100
Saurauia Seibertii, 290
Schultesia brachyptera f. *heterophylla*, 298
 Seibert, Russell J., Robert E. Woodson, Jr. and. Contributions toward a flora of Panama. III, Collections during the summer of 1938, chiefly by R. E. Woodson, Jr., P. H. Allen, and R. J. Seibert, 265
Selenipedium caudatum, 279; *Hartwegii*, 280
 Senecio Cooperi, 314
 Smith, L. B., Panamanian *Bromeliaceae* determined by, 275
Solenophora australis, 311; *calycosa*, 312
 Specific difference: The genetic coefficients of, 325; general formula for measurement of, 326
 Specific gravity of wood in relation to strength, 3; determinations of, 39
 Standley, P. C., determinations of Panamanian plants by: *Dilleniaceae*, 290; *Euphorbiaceae*, 289; *Guttiferae*, 294; *Myrtaceae*, 295; *Rubiaceae*, 313
Stemmadenia obovata var. *mollis*, 299
 Strength properties of coniferous wood, 1; fibrillar angle in relation to, 21, 50, 84-94; growth ring width, effect of, on, 7, 41; heartwood and sapwood in relation to, 10; review of factors affecting, 2; springwood and summerwood in relation to, 9, 39
Struthiopteris loxensis, 274
 Studies on variation in *Gibberella Saubinetii* (Mont.) Sacc. (*Fusarium graminearum* Schwabe), 99
 Svenson, H. K., Panamanian *Cyperaceae* determined by, 274

T

- Tabebuia chrysantha*, 308; *heterotricha*, 307; *Palmeri*, 308
Telipogon ampliflorus, 287
 Temperature, effect of, on variation in *Gibberella Saubinetii*, 107, 110, 150-154

- Temperatures of trees, 165; apparatus used in study of, 166, 166; charts showing, 168, 238-255; "degree-hours," 170; lag, 215; influence of atmosphere on, 171, of soil, 223, of vaporization, 225
- Tension tests: axial, of air-dry and green wood, 42; in Amsler hydraulic testing machine, 80
- Thermostasy, tree, 165, 203
- Tiliaceae, Panamanian, 290
- Tillandsia punctulata, 275
- Tracheids in coniferous wood, 12; radial group of springwood, 86; radial group of summerwood, 84, 86, 88, 90, 92, 94; wall structure, 16
- Transpiration, effect of, on tree temperature, 225
- Tree temperatures and thermostasy, 165; factors affecting, 170; charts showing, 238-255
- Trees, coniferous, microscopic study of wood of, in relation to strength properties, 1
- Trichomanes Ankersii, 273
- Tropical America, New or otherwise noteworthy Apocynaceae of, VI, 95; VII, 257
- Tussacia Friedrichsthaliana, 267, 309; **Woodsoni**, 267, 308
- U
- United States, western, Two new Asclepiads from the, 261
- V
- Vacciniaceae, Panamanian, 297
- Vallesia, 258
- Vaporization in relation to tree temperature, 226
- Variation: studies on, in fungi, 99; in *Gibberella Saubinetii* (Mont.) Sacc., 99; effect of different media on, 110, 152
- Viburnum stellato-tomentosum, 314
- Vitaceae, Panamanian, 294
- Vriesia **Woodsoniana**, 275, 318
- W
- Warrea costaricensis, 284
- "Weissholz," 3
- Williams, L. O., Panamanian Orchidaceae determined by, 279
- Wood, coniferous: A microscopic study of, in relation to its strength properties, 1; gross structure of, 6; histology of, 11; planks used for testing, 82; tension fractures of, 61; tracheids in, 12, 16, 84-94
- Wood planks used for testing strength, cross-section from, 82
- Woodson, Robert E., Jr. New or otherwise noteworthy Apocynaceae of Tropical America. VI, 95, VII, 257; Two new Asclepiads from the western United States, 261; and Russell J. Seibert. Contributions toward a flora of Panama. III, Collections during the summer of 1938, chiefly by R. E. Woodson, Jr., P. H. Allen, and R. J. Seibert, 265
- Y
- Yuncker, T. G., Panamanian Cuscutaceae determined by, 305
- Z
- Zingiberaceae, 277
- "Zugholz," 3